

Applicant : Jeffrey A. Lewno
Serial No. : 08/924,405
Page : 23

assembly in the vehicle and without exposure of said bonded load-bearing attachment

Dinner
member on said second surface of said panel;

said glass panel having a weight of at least about 3 kilograms and an area of at least about 250 square inches.

REMARKS

Claims 1-4, 6-24, 34-37, 39-48, 52, 60-74, 76, 77, 79-92, 95, 99-110, and 112-153 remain in the application. Claim 78 has been cancelled herein without prejudice in view of the amendments to claim 71. Claims 5, 25-33, 38, 50, 51, 53-59, 75, 93, 94, 96-98 and 111 have been previously cancelled in the Preliminary Amendment for this application. Claims 1-4, 6, 15-18, 39, 41, 47, 60-63, 67, 70-74, 79, 85-89, 99, 106-108, 110, 116, 122-127, 129-131, 146 and 148 have been amended herein. Reconsideration of the amended claims in view of the interview conducted with Examiner Patrick Niland on April 21, 1998, by Dr. Niall R. Lynam, Senior Vice President and Chief Technical Officer of Donnelly Corporation, the assignee of the present application, and the undersigned counsel for Applicant and a Notice of Allowance for all claims remaining in the application is respectfully requested.

During the interview mentioned above, the prior art of record, specifically, Repp et al. 5,551,197 was discussed along with the differences between the present invention and the invention disclosed in Repp et al. In addition, the proposed claim amendments set forth above were discussed in concept including the addition of language indicating that the adhesive layer bonding the glass panel or substrate in Applicant's present invention to the load-bearing attachment member consists essentially of a layer of rapid set, rapid cure, two-component adhesive which is different from the invention of Repp et al. At the conclusion of

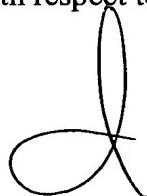
98

Applicant : Jeffrey A. Lewno
Serial No. : 08/924,405
Page : 24

the interview, the Examiner indicated that by amendment of the claims in this manner, the rejections based on Repp et al. would appear to be overcome because of such differences. The Applicant, Dr. Lynam and the undersigned counsel for Applicant sincerely thank the Examiner for his courtesy and helpfulness during the interview and throughout the prosecution of this application.

As discussed in the interview, Applicants have now amended the claims of the application to indicate that the glass panel or substrate and the load-bearing attachment member are joined by an adhesive layer and that the adhesive layer consists essentially of a layer of rapid set, rapid cure, two-component urethane adhesive, or rapid set, rapid cure, two-component adhesive comprising an isocyanate component and a polyol component, disposed between the glass panel and substrate and the attachment member, or a glass frit layer on the glass panel or substrate and the attachment member. Such layer of adhesive is cured to form a joint. The adhesive layer bonds the load-bearing attachment member to the glass panel, or substrate or frit layer on the glass panel or substrate, prior to installation of the assembly in the vehicle and without exposure of the bonded load-bearing attachment member on the second surface of the panel.

These amendments have been incorporated in all of the independent claims. In addition, dependent claims 2-4, 15-17, 39, 60-63, 72-74, 79, 85-87, 99, 106-108, 116, 122, 127, 129, 130 and 146 have been amended to refer to the antecedent language of the independent claims. For example, in such dependent claims, said adhesive has been amended to state "said adhesive layer." Further, claims 2-4, and 72 have been clarified to indicate the time period in which the adhesive achieves a set. With respect to claims 127, 129, and 130,

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Applicant : Jeffrey A. Lewno
Serial No. : 08/924,405
Page : 25

various layers of the rapid set, rapid cure, two-component urethane are clarified for bonding the pin component and guide tracks set forth in those claims. No new matter has been added in the amended claims.

As also discussed in the interview, and as agreed by the Examiner, the above amendments clarify Applicant's invention and distinguish this invention from the disclosure of Repp et al. 5,551,197 taken alone or in combination with any of the secondary references Mülhaupt et al. 4,963,636, SAE Technical Paper 910758 by Csokasy et al., Bamford et al. 3,282,014, Jackson 5,072,984, Kronbetter 5,294,168, Friese et al. 4,793,099, Schmucker 5,508,111, Sartelet et al. 5,338,767, Morgan et al. 4,364,214, Goel 4,743,672, Schürmann 4,995,666, Bravet et al. 5,529,655, or BETAMATE® Technical Bulletin 73100/73003 or the BETAMATE® Structural Adhesives Data Table. As explained previously of record and in the interview, the references of record fail to disclose, teach or suggest Applicant's claimed solution in this invention. Further, the references fail to teach or suggest Applicant's claimed combinations including a load-bearing attachment member and a glass panel or substrate where the adhesive bonds the attachment member to the glass panel or a frit layer on the glass substrate prior to installation of the assembly in the vehicle and without exposure of the load-bearing attachment member on the opposite, second surface of the panel. Indeed, many of the references cited by the Examiner refer to single component urethanes which, as discussed in the present specification, such as the background of the invention at pages 1-4 and the experimental testing results on pages 31-43, including the accompanying tables and figures, show that the single component urethanes do not obtain the objectives of the present invention. The rate of set and cure of prior known adhesives, such as single component

Applicant : Jeffrey A. Lewno
Serial No. : 08/924,405
Page : 26

urethanes, is significantly slower than the rapid set, rapid cure adhesive used in the present invention. As such, those references teach away from the present invention.

As discussed with the Examiner during the interview, while Repp et al. '197 teaches several adhesives, it does not disclose, teach or suggest the specific type of adhesive defined in Applicant's present claims, namely, a layer of adhesive consisting essentially of a rapid set, rapid cure, two-component urethane adhesive, or a rapid set, rapid cure two component adhesive comprising an isocyanate component and a polyol component, such as that described in Applicant's specification at pages 17-26, for example. Indeed, Repp et al. '197 discloses in columns 7 and 8 that a preferred form of the adhesive for bonding the hinge to the glass panel in Repp et al. is through the use of two separate adhesives, namely, a temporary fixturing adhesive, such as a hot-melt thermoplastic which temporarily locates or fixtures the hinge against the window panel, and a second adhesive which slowly cures and forms the permanent, primary bond. Column 8, lines 39-43, state that the preferred adhesive for the permanent, primary bond comes in a single package so that no mixing of reactants need occur prior to application, and provides a much more efficient method than previously known adhesives requiring mixing of reactants. Specifically, a moisture-activated, single component, adhesive urethane, such as Morton Yokohama WS70-FK is listed as the permanent adhesive. However, using a temporary and a permanent adhesive is distinguished by Applicant's amended claims which define an adhesive layer consisting essentially of a layer of rapid set, rapid cure, two-component urethane, or a rapid set, rapid cure, two-component adhesive comprising an isocyanate component and a polyol component, forming a bond and joint between the glass panel or substrate and load bearing attachment member.

Applicant : Jeffrey A. Lewno
Serial No. : 08/924,405
Page : 27

The rapid set, rapid cure, two-component adhesive defined by Applicant in the amended claims would not be expected to result from the use of two distinct adhesives, namely, a temporary and permanent adhesive as set forth in Repp et al. '197. The temporary fixturing adhesive is included in Repp et al. specifically to hold the hinge or other member while the other adhesive permanently sets up over a lengthy period of time. The attachment of the load-bearing attachment member to glass or frit in Applicant's present amended claims using an adhesive formed from two components which provides both rapid set and rapid cure is simply not contemplated by any of the disclosure of Repp et al. '197.

Likewise, the secondary references fail to add any disclosure missing from Repp et al. to arrive at Applicant's invention as set forth in the amended claims. The mere fact that the secondary references disclose one or two-component adhesives generally, while Repp et al. '197 discloses the use of two separate adhesives for temporarily and permanently attaching a member to glass, does not suggest that these references should be combined. Further, even if combined, the references would fail to disclose Applicant's window assemblies as set forth in the amended claims.

Specifically, Sartelet et al. 5,238,767 describes the fitting of a glass in a window profile, not the attachment of a load-bearing attachment member to a substrate without exposure of the attachment member on the opposing second surface of a window assembly as in Applicant's amended claims. Indeed, the adhesive in Sartelet et al. is directed to a specific thixotropic effect to prevent running and dripping even on vertical surfaces.

Applicant : Jeffrey A. Lewno
Serial No. : 08/924,405
Page : 28

Csokasy et al. SAE Paper No. 910758 discloses encapsulation concepts for RIM urethane on one side of an automobile window, not the use of a rapid set, rapid cure, urethane adhesive for load-bearing structures as in the present invention.

Mülhaupt et al. '636 and Goel '672 relate to adhering one element to another with no specific structure being noted, especially as set forth in Applicant's amended claims.

Bravet et al. '655 discloses adhering glass into a vehicle, not the combination of glass panel and a load-bearing attachment member secured by an adhesive as set forth in Applicant's amended claims.

Schmucker 5,508,111 is directed a polyurethane adhesive which exhibits good sag and thixotropic properties especially adapted for bonding an inner structural panel to an thin outer appearance panel. Again, Applicant's claimed combinations are not disclosed or suggested.

Sherman '666 relates to adhering parts to panels and does not include any disclosure of specific two-component, rapid set, rapid cure adhesives, as set forth in Applicant's amended claims.

Friese et al. '099 merely discloses a specific type of sliding window, not the combinations of Applicant's amended claims using the specific adhesive layer now set forth.

Kronbetter '168 merely discloses a specific structure of a sliding window, not the combination of elements defined by Applicant's invention.

Jackson '984, in fact, teaches away from Applicant's invention since it discloses holes drilled through windows to receive fasteners, such as that at 25, which are exposed on both sides of the window pane. Applicant's claims specifically exclude such

Applicant : Jeffrey A. Lewno
Serial No. : 08/924,405
Page : 29

structures. The purpose of the present invention is to avoid the drilling of such holes and the use of such exposed fasteners.

Similarly, the remaining references of record including Bamford et al. '014, Morgan et al. '214, the BETAMATE® references, and Ryan et al. '867, all fail to disclose or suggest the structures set forth in Applicant's amended claims.

Should the Examiner have any questions or wish to further discuss this Response, he is respectfully requested to telephone the undersigned counsel for Applicant at the address and number listed below.

Accordingly, as discussed with the Examiner during the interview, it is respectfully submitted that claims 1-4, 6-24, 34-37, 39-48, 52, 60-74, 76, 77, 79-92, 95, 99-110, and 112-153, as amended, are allowable and a Notice of Allowance is earnestly and respectfully requested.

Respectfully submitted,

JEFFREY A. LEWNO

By: Van Dyke, Gardner, Linn & Burkhart, LLP

Date

May 6, 1998

Donald S. Gardner
Donald S. Gardner
Registration No. 25 975
2851 Charlevoix Drive, S.E.
P.O. Box 888695
Grand Rapids, MI 49588-8695
(616) 975-5500

DSG/ram